# 256KXLE

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## UPGRADE FOR ATARI 800XL/1200XL COMPUTERS

## INCLUDES UTILITIES SOFTWARE

( RAM NOT INCLUDED )



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This is the most compatible 256K upgrade on the market today. Designed to run XE software the others won't. It comes with a DOS that doesn't cost extra. And there is even a disk copy program at no extra cost.

All you need is a soldering iron, some solder, and eight 256K ram chips to start experiencing the world of ramdisk, and all the XE software designed to use the extra memory.

Don't be fooled by other upgrades. If they don't have Antic banking, they can't run all the XE software properly. Ask before you buy and we think you will agree that the 256KXLE is the right choice.



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NEWELL INDUSTRIES, P.O. Box 253, WYLIE, TX. 75098, 214-442-6612

# 256KXLE INSTALLATION

CAUTION: This product should only be installed by persons with proper training in the art of soldering. Newell Industries will not be held responsible for damage to the computer due to neglect or carelessness.

Read these instructions completely before beginning. Refer to drawing during installation.

# 256KXLE INSTALLATION, 1200XL ONLY

Refering to drawing at the end of the instructions, cut the three traces and install the three jumper wires. These mods must be done before installing the 256KXLE in the 1200XL.

TEST COMPUTER BFORE CONTINUING INSTALLATION.

# 256KXLE INSTALLATION, 800/1200XL

1.Disassemble computer and remove the top RF shield. Refer to drawings during installation.
2.Locate and remove the 64K ram chips. U9-U16 on the 800XL. U1-U6 and U8 and U9 on the 1200XL. If your ram chips are not in sockets, they will have to be unsoldered.
3.Install the 256K x 1 bit 150ns DRAM chips where you remove the old ram chips. Make sure that you have pin 1 in the proper location. Pin 1 of any chip is ALWAYS to the left of the notch that is at (what is referred to) the top of the chip.
4.Remove the 74LS158 or 74LS258 chip from U27 on the 800XL. On the 1200XL, remove the 74LS158 from U10.
5.Plug the 256KXLE jumper plug into U27 of the 800XL. Plug the 256KXLE into U10 on the 1200XL. Fold the cable and place the board component side up. Make sure that pin 1 is aligned. The red wire should be on the side closest to the rams.
6.Make the following connections from the 256KXLE board H2 cable. See drawings.

| WIRE # | TO | WIRE # | TO |
|---|---|---|---|
| 1(Red) | Antic (C012296 or C021697) pin 9 | 8 | NC |
| 2 | 74LS51 pin 9 | 9 | NC |
| 3 | Ram chip pin 1 (see notes) | 10 | PIA pin 12 |
| 4 | Antic pin 8 (see notes) | 11 | PIA pin 13 |
| 5 | CAS out (74LS51 hole 8,see notes) | 12 | PIA pin 14 |
| 6 | CAS in (74LS51 pin 8,see notes) | 13 | PIA pin 15 |
| 7 | NC | 14 | PIA pin 16 |

The red wire is wire # 1. The next wire is 2, etc.

7.Make sure that the 256KXLE board is not shorting to anything and turn the computer on. If installation was done properly the computer should come up in the same manner that it did before this installation was done. If not, correct the problem (see trouble shooting) and try again.
8.When putting the computer back together, use extreme caution to make sure that the 256KXLE board does not short out anything. You may want to use cardboard or electrical tape to insure this, especially if you move your computer around very much.

NOTES:

1. Ram chip pin 1 is the inside most hole (see drawing) of the R32 resistor pad (800XL) that is common with pin 1 of the ram chips. On the 1200XL, the wire goes to the R30 resistor pad closest to the ram.
2. If you have the CO21697 Antic, then wires 4,5, & 6 need not be connected.
3. If you have the CO12296 Antic, then you must use the CAS before RAS refresh, and wires 4, 5, & 6 must be connected. SEE SECTION ON CAS BEFORE RAS REFRESH.

# CAS BEFORE RAS REFRESH

The CO12296 Antic chip used in the Atari 800 had a bug (or design) in it that only allowed a 7 bit refresh. This was corrected in the CO21697 Antic and it will support the 8 bit refresh required by the 256K ram chips. But if you have the old chip (or you just want to do it), we can change the RAS ONLY refresh cycle to a CAS before RAS refresh cycle supported by the 256K chips. They have there own refresh counter and do not require any addressing. I beleive that all the 256K chips support CAS before RAS refresh, but verify that the ones you use do. The 64K rams do not have this feature, so don't try to use them with it. It won't work. Refer to the drawings in the back to hook up CAS in & out wires on 800XL.

On the 1200XL, bend pin 8 of the 74LS51 in U25 up. Connect CAS IN to this pin. Connect CAS OUT to SOCKET hole 8 or common location (CAS on any of the ram chips).

# Helpful hints:

If you have read these instructions and do not understand them, then do not attempt this installation without assistance. For assistance, you may call Newell Industries between 9 and 5 CT. Collect calls will not be accepted.

Plan the routing of the wires before you start. If you feel that you cannot do the installation yourself, and cannot find anyone locally to do it, Newell Industries will install the upgrade for $40.00. Includes return shipping.

If you have to desolder your ram chips, and you install sockets, make sure that the sockets that you use are high quality, preferably double side wipe (metal contacts the IC leads on both sides).

Some of the 800XL computers have the data lines to the ram drilled and resistors installed across them. If so, the resistors must be left connected, or reconnected for proper operation.

## TROUBLE SHOOTING

BLANK SCREEN, MYDOS WILL NOT BOOT, ERRORS DURING TEST

This could be caused by numerous things. Check all ICs for bent pins. Check for shorts in soldering.

UNKNOWN

The chances of your having a defective 256KXLE are very small. The most common cause for problems are improper installation. If you have double checked your installation and it still does not work, contact Newell Industries for further assistance.

## WARRANTY

Newell Industries will repair or replace any defective part for a period of ninety days from date of purchase at no charge. This excludes parts that have been mishandled or modified in any way.

If you have installed the 256KXLE upgrade in your computer and cannot get it to function properly, you may send your computer motherboard to Newell Industries and it will be repaired and returned to you at no charge if it is determined that the upgrade parts are defective. If improper installation is the cause of the failure, Newell Industries will correct the installation and return the tested board to you COD for charges.

## USING YOUR 256K RAM

The 256KXLE ram expansion provides 64K of direct memory plus 192K of bankable memory in 12 16K banks. The design of this upgrade is so that software designed for the 130XE computer should now load and run on the computer.

Location $D301, the bit map;

BIT 0-O.S. ROM CONTROL, 1=ROM, 0=RAM
BIT 1-BASIC ROM CONTROL, 1=RAM, 0=ROM; NOT USED IN 1200XL
BIT 2-RAM BANK SELECT, 1=RAM, 0=RAM, SEE NOTE
BIT 3-RAM BANK SELECT, 1=RAM, 0=RAM, SEE NOTE
BIT 4-RAM BANK ENABLE, 1=NOT ENABLED, 0=ENABLED
BIT 5-RAM BANK SELECT, 1=RAM, 0=RAM & ANTIC ENABLE, SEE NOTE
BIT 6-RAM BANK SELECT, 1=RAM, 0=RAM, SEE NOTE
BIT 7-DIA.ROM CONTROL, 1=RAM, 0=ROM

NOTE:Bits 2,3,5,and 6 have no effect unless bit 4 or 5 is 0 (enabled). The bank memory address is $4000-$7FFF.

The function of location $D301 is the same as the 130XE with the exception of bits 5 and 6. Bit 5 on the 130XE allows ANTIC to follow banked memory if set to 0. We also use it for ram banking. Bit 6 is not used on the 130XE.

BIT 4- THE CONTROL BIT

The CPU never sees the extra memory unless bit 4 is set to 0. Once this is done the CPU is looking at the extra memory determined by the setting of bits 2,3,5, and 6.

REFERENCE VALUES (stored in location $D301):

FF=standard ram, basic disabled
EF=extra ram, EB=another bank, E7=another bank, E3=another bank.
CF=another bank, CB=another bank, C7=another bank, C3=another bank.
AF=another bank, AB=another bank, A7=another bank, A3=another bank.
8F=C000-FFFF(RAM UNDER OS), 8B=8000-BFFF, 87=4000-7FFF, 83=0000-3FFF.

NOTE: CAUTION should be used when banking the main memory into the banked memory address range. If you don't know what your doing, don't do it.

There is a simple program that checks 4 bytes of each bank of extra memory to insure that they are working. It is on the disk furnished. The filename is "XLETEST.BAS". When this program is ran, it should come back with "TEST COMPLETE, 0 ERRORS". If you get any ERROR messages back,

refer to the trouble shooting section. CAUTION, reboot your system after running this program. It alters memory, and may have some undesirable affects if the system is not rebooted.

## MYDOS DISK OPERATING SYSTEM

The MYDOS disk operating system is furnished with the 256KXLE upgrade. It is configured for a 208K ramdisk (192K of extra memory + 16K under OS) as shipped. Refer to the Mydos manual (ARCHIVED ON THE DISK) for setting up the various types of ramdisks available. DO NOT USE THE DEFAULT SETTINGS TO CONFIGURE THE RAMDISK. Mydos as shipped is configured to use all 12 extra ram banks plus the 16K ram under the OS. The sequence of usage and as it would be entered is: A3,A7,AB,AF,C3,C7,CB,CF,E3,E7,EB,EF,8F,0. If you are using software that uses the ram under the OS, reconfigure mydos for 192K and omit the 8F in the above sequence. See the mydos manual for a more detailed explanation of the ramdisk handler.

### COMPATIBILITY

The 256KXLE should be compatible with all software designed to run on the 130XE. In the 256K mode, it is compatible with the ramdisk file RD.COM of Sparta DOS, and any software that is compatible with this. DO NOT use the RDNEW.COM file with this upgrade. It is for the original 256KXL.

The 256KXLE is the only 256K upgrade that we know of that supports true Antic banking like the 130XE. It WILL run software properly that the others won't. In short, it's the most 130XE compatible 256K upgrade availible.

## COPY256E SECTOR COPIER

This program was designed to be used with the 256KXLE upgrade. It should not be used with any other computer unless it is verified that it uses the same bank switching methods. The program resides at $8500, once loaded may be reran using the M option of DOS to run at $8500 (assuming it has not be overwritten by another program).

Use the 'L' command from DOS to load COPY256E. If you are going to copy 80 track or double sided diskettes, your disk drives must be configured prior to running the program. The program can be loaded from the ramdisk if you need to configure your drives. COPY256E uses ONLY the banked memory area for copying, so nothing special is required, although it will overwrite the ramdisk.

The first prompt. HOW MANY COPIES?
Enter how many copies you want (1-99) and, if needed, the special characters to pass information to the program.

SPECIAL CHARACTERS
A "D" entered after the number of copies (exp. 25D) indicates that the diskette you are going to copy is a double density diskette.

A "Q" indicates that you want to copy 1440 sectors per diskette. (exp. 25DQ) This could be a 40 track double sided, 80 track single sided, or 80 track double sided diskette that you only want to copy the first 1440 sectors. Remember that the format option will format the new diskette to the configuration of the drive.

An "O" indicates that the diskette you are going to copy has 2880 sectors. (exp. 25DO) This would be an 80 track double sided diskette.

An "H" indicates that you just want to copy the first portion of the diskette, including the directory (369 sectors). (exp. 25H) This example would copy the first 369 sectors of any single density diskette.

NOTE: The last character entered will be the one used by the program. (exp. 1DHQ translates to 1DQ, 99QOHD translates to99HD) A "Return" without a specified number of copies will be interpreted as 153. (exp. H translates to 153H) "Return" must be after entry. (exp. 1H"Return")
SOURCE DRIVE?
Enter the drive number where you will put the diskette to be copied. (1-4) Do not press "Return". Drive density is automatically set on source disk.

DESTINATION DRIVE?
Enter the drive number that you will use to write the copies to. (1-4) Do not press "Return". Drive density must match source diskette. Using the same drive for source and destination will insure that the density matches.

VERIFY WRITES (Y OR N)
Press "Y" if you want to write with verify. This takes about 3 times longer to copy a diskette and is normally not used unless you have some very important diskettes to back up.

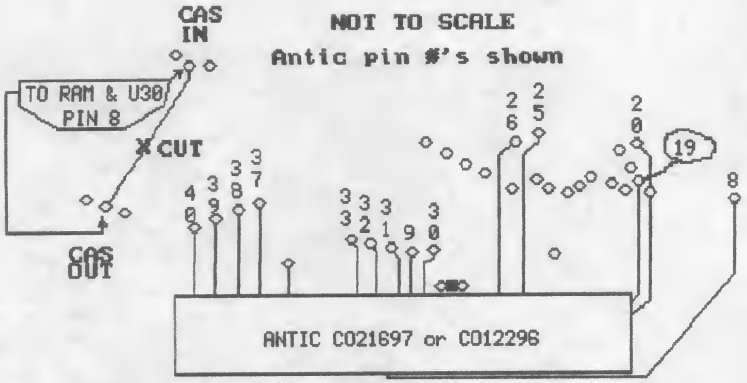
FORMAT (Y or N)?
Press "Y" if you want the destination diskette formatted automatically with every copy.

Otherwise press "N". Do not press "Return".

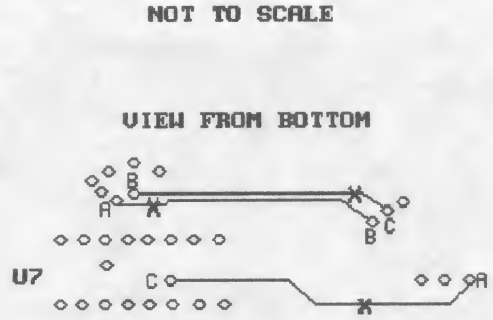
INSERT SOURCE DISK, PUSH START
Follow this prompt to read your source diskette.

INSERT DESTINATION DISK, PUSH START
Follow this prompt to write your copies.

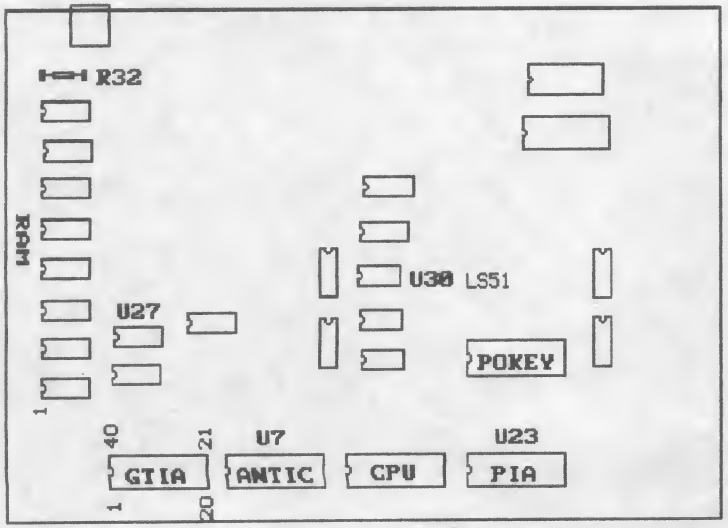
UNREADABLE SECTORS
If unreadable sectors are encountered, after a few tries, the program will continue to the next sector, using whatever data it got from the bad sector to write to the destination disk, until the end sector is reached. This program is not intended to copy copy protected diskettes. Be aware that it is illegal to copy copyrighted software for any purpose other than backup.



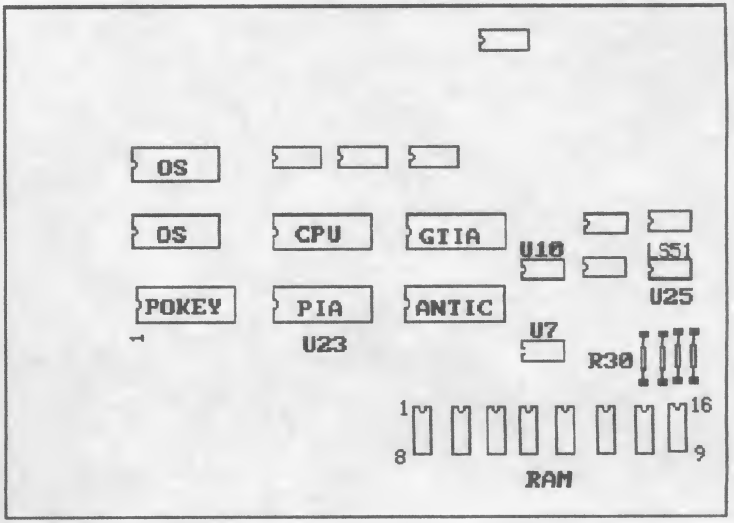

800XL ALTERNATE HOOK UP POINTS
VIEW FROM TOP




1200XL ONLY
CUT TRACES MARKED X, CONNECT A-A, B-B, C-C




800 XL GENERAL LAYOUT




1200 XL GENERAL LAYOUT